PROGRAM REVIEW Fall 2020

Program: Biology Division: STEM Date: 10/27/2020

Writer(s): Ann Hight, Segal Boaz, Jill Carbone, Michal Shuldman, Barbara Zingg, Dana Nakase

SLO/SAO Point-Person: Ann Hight

Audience: Deans, Vice Presidents of Student Services and Academic Services, All Planning and Allocation Committees. This document will be available to the public.

Uses: This Program Review will be used to inform the campus and community about your program. It will also be used in the processes of creating Division Summaries, determining College Planning Priorities and allocating resources. A final use is to document fulfillment of accreditation requirements.

Please note: Program Review is NOT in itself a vehicle for making requests. All requests should be made through appropriate processes (e.g. Instructional Equipment Request Process) or directed to your dean or supervisor.

Time Frame: This Program Review should reflect on program status during the 2020-21 academic year. It should describe plans starting now and continuing through 2021-22.

Sections: This Program Review has been shortened due to the COVID-19 pandemic. The Program Review Committee understands that you are completing this program review in a time of stress and disruption and that this may affect many of your responses. Sections and questions are marked with the name of the committee or office that will use the information.

- The first section focuses on general program reflection and planning.
- The second section has specific questions to be filled out by all programs this year.
- The third section is a review of curriculum, to be filled out only by programs with curriculum.

Topics: The Program Review Glossary defines key terms. Writers should review this glossary before writing: https://bit.ly/2LqPxOW

For Help: Contact Nadiyah Taylor: ntaylor@laspositascollege.edu.

A list of contacts for help with specific sections is provided on the Program Review website under the "tools for writers" tab. [https://bit.ly/3fY7Ead]

Instructions:

- 1) Please respond to each question as completely as possible.
- 2) If the requested information does not apply to your program, write "Not Applicable."
- 3) Optional: Communicate with your dean about completing this document.
- 4) Send an electronic copy of this form to Nadiyah Taylor and your dean by Monday, November 2.

Links:

Program Review Home Page: <u>laspositascollege.edu/instructionalprogramreview</u> Fall 2019 Program Reviews: <u>laspositascollege.edu/programreview/pr2019.php</u>

Frequently Asked Questions: laspositascollege.edu/instructionalprogramreview/programreviewfaqs.php

Section One: Program Snapshot [Program Review Committee]

For assistance with this section, contact the Program Review Committee Chair. [https://bit.ly/3fY7Ead]

No Significant Changes Option
Contact person:
By marking an X in the box above, the writers of this Program Review indicate that there have been no significant changes to their program or their program's needs in the past year. In this case, programs may opt not to complete Program Review Section One: Program Snapshot. Programs must still complete all other sections (as applicable).
Please note: Choosing this option means that your program's information may not be included in the yearly Division Summary.
The No Significant Changes Option may only be used for two years in a row; after two years, programs must complete a full Program Review including the Program Snapshot. Our program's most recent Program Snapshot was submitted in the following semester: Fall 20

- A. Accomplishments: What plans were achieved during AY19-20? You may describe achievements that were or were not planned in earlier Program Review. Your response may include actions regarding COVID-19. Please highlight any positive impacts to students.
 - Perhaps our most noteworthy accomplishment this past year has been responding to the effects of COVID-19 and adapting our course to DE format. This required a herculean effort by our department coordinators to communicate rapidly changing information to faculty, staff and students while making collaborative decisions, and answering a deluge of questions all in a quick timeframe. Similarly, the other full-time faculty members worked tirelessly to communicate with adjunct faculty in their lead courses, collaborate on teaching methodologies, and essentially figure out how to transition our lab courses online. While the department faculty demonstrated their exceptional teamwork and professionalism, much recognition and kudos are also due to our Dean and department coordinators for their unflagging leadership and guidance during this transition. We hope that these efforts supported students and allowed them to continue with their academic and career goals. Perhaps the biggest evidence of this support for students is the continued demand and waitlists for our DE classes in fall 2020.
 - Michal received an NSF grant of \$299,990 over 3 years. The main purpose is to incorporate biotechnology and career pathway skills into our Biology majors' classes. We hope this will help improve retention as students gain skills that can get them good jobs right away and help them learn about career opportunities which they may not be familiar with. We will be working closely with our Bioscience Advisory Board and industry partners to develop certified badges for lab skills. We will also develop content around career based soft skills (e.g. developing LinkedIn account, applying for internships).

- Michal also received a SOCIL-SLL Seed Grant (about \$9500 over 18-months but the grant as a whole is \$100,000). LPC will be a partner institution to implement practices (e.g. instructor and study surveys, interventions in some sections of classes, work with IR to get data, etc.) This study seeks to determine how adaptive technology and other online tools can be leveraged to provide a collaborative learning experience for students in introductory biology courses across the California college system. Providing a collaborative learning environment external to the classroom will provide a space for students to externalize information, build knowledge, and develop their own sense of belonging, and promote study skills, thus reducing achievement gaps for minoritized students. We will be working with a group of regional partners (UC Berkeley, Stan State, DVC, Los Medanos, and Lawrence Hall of Science).
- The DE addendums were submitted through Curriculum Committee for all biology classes being taught from spring 2019-fall 2020.
- Full time and part time faculty ran smartshops on: The Metric System, two different Microscope workshops, reading a scientific paper, graphing. In partnership with counselors we've offered smartshops on: Biology Major/career, and Nursing major.

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	Community Partnerships/Outrea ch		Facilities, Supplies and Equipment, Software		LPC Planning Priorities		Services to Students
	Course Offerings		Financial/Budgetar y	X	LPC Collaborations		SLO/SAO Process
X	Curriculum Committee Items		Human Resources	Х	Pedagogy		Student Equity
	External Factors	X	Learning Support	X	Professional Development	X	Technology Use

B. Challenges, Obstacles and Needs: Describe any significant challenges, obstacles or needs for your program. Your response may include issues regarding COVID-19. Please highlight any negative impacts for students.

Facilities:

• The largest obstacle that our program faces is the need for more facilities due to the growth of the program. With the exception of section cuts due to COVID- 19, we typically add classes to the schedule to meet students' needs, which results in back-to-back labs and lectures. This has led to increased challenges with scheduling and with the lab technicians' ability to prepare for the lab classes. Even though facilities are not a challenge during the college's response to COVID-19 we cannot be myopic and ignore this on-going challenge that will arise again when we are back on campus.

Budget

Most of the send-home kits were funded through CARE grants. Faculty and staff are still
exploring the possibility of purchasing additional kits. Depending on which kits and for which
classes, we may need additional funding.

Curriculum and/or Pedagogy:

- The most obvious challenge we face is how to offer and teach our courses in a DE format while preserving the same quality of instruction that we provide in face-to-face classes. In particular, faculty continue to research, pilot and collaborate on methodologies and technologies in place of the rich hands-on lab experiences that are the flagship of our program.
- Biology and Physics faculty collaborate on the Environmental Studies and Environmental Science program with no dedicated faculty lead to coordinate efforts. This is a slow-going process by nature, as it is an interdisciplinary field, and requires a significant amount of time and energy.
- We wanted to develop an additional Environmental Studies certificate. However, this requires
 the development of a new field biology course, which involves researching, and visiting field
 sites, obtaining appropriate permitting, creating an Advisory Board, and updating the Bio 40
 course outline to meet C-ID. Because this process is labor intensive, and we have no dedicated
 faculty lead, this has been unable to happen thus far.
- Many of our laboratory courses, including lab activities and lab manuals need reviewing and reevaluation to improve student learning, ideally with more inquiry-based instruction. This takes significant time from full-time faculty, collaboration with part-time faculty, and lab technicians.

Human Resources:

- We urgently need to hire a replacement for Darcy Ernst. We currently have no full-time faculty
 with expertise in cell biology, thus our Bio majors capstone course (Bio 1C) is taught entirely by
 adjunct faculty. Without this replacement hire we have no full-time faculty with a background in
 biotechnology to co-lead the Biotech Bootcamp offered over the summer, nor lead on the
 BioScience Advisory Board.
- Secondarily, we are in need of more full-time faculty for Allied Health courses. These courses are typically the first to fill during registration, often with waitlists that fill too. Impacted courses affect our students negatively, unnecessarily increasing their time to completion, and causing students to take allied health courses at other community colleges. A full-time faculty member in Allied Health would bring more consistency in instruction, mentoring opportunities for students, independent studies, and honors projects. A full-time faculty member can serve as a faculty advisor for the Biology Club/Nursing Club. Moreover, finding highly qualified adjuncts to teach in this area has been problematic since we compete with surrounding community colleges for the limited pool of qualified adjuncts. Employing less than highly qualified faculty to teach in the allied health courses is a disservice to our students both in persistence in the allied health pathway especially for historically underserved minority populations and in preparation for highly competitive allied health programs.

Professional Development

- Professional development would help faculty to learn more about adapting their course to an on-line format.
- Our department would like to learn more about equity issues both in our classrooms and how it also impacts enrollments in our classes.

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	Curriculum	X	Human Resources	Х	Pedagogy	X	Student Equity
	Committee Items						
	External Factors		Learning Support		Professional	X	Technology Use
					Development		· ·

C. IR Data Review: Describe any significant trends in your program's data from the office of Institutional Research and Planning. (Note: Not all Programs have IR data available; if your program does not have a data packet or dashboard data, you may note that in the response box.) You may also discuss any other data generated for your program by the Office of Institutional Research and Planning.

IR Data packets are available here: https://bit.ly/2IYaFu7

Course Success Rates Dashboard can be found at the bottom of this page: https://bit.ly/2Y9vGpl

For assistance with this question, contact the Director of Institutional Research and Planning. [https://bit.ly/3fY7Ead]

The Biology department continued to grow, with an increased student headcount (increased 9% from AC 18-19, 22% from AC 15-16) and course enrollment (increased 10% from AC 18-19, 22% from AC 15-16).

Our success rate is 72.4%, up from 71.3% in 2018-2019, and above the set standard of 64.9%

While course success rate stayed steady from F2018 to F2019 (69%), there was an increase in course success in the spring semester (up 2% to 77% course success from S2019). Withdrawal rates increased slightly from F2018 (16%) to F2019 (17%) and there was an increase in withdrawal rates in the spring 2020 (Spring up 6% to 18% from 2019), likely due to the effects of the COVID-19 pandemic.

An equity gap exists with lower success rates and higher withdrawal rate in our Latinx and African American students compared to white and Asian students during the 2019 - 2020 academic year. The success rate of Latinx students was 67% and African American students was 50%, compared to 76%

for white students and 77% for Asian students. The withdrawal rate of Latinx students was 21% and African American students was 31%, compared to 16% for white students and 15% for Asian students.

There was a decrease in % FTEF from full-time faculty for both semesters. In fall of 2019, %FTEF dropped from the previous year, from 47% in F2018 to 39%. Spring 2020 also saw a decrease from the previous year, 53% in S2019 to 31% in S2020 due to a full-time faculty member being on leave. Biology continues to have high fill rates in our courses (Fall: 98%, Spring: 99%)

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Community Partnerships/Outrea ch	Facilities, Supplies and Equipment, Software	LPC P Prioriti	Planning es		Services to Students
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Curriculum Committee Items	Human Resources	Pedag	logy	X	Student Equity
External Factors	Learning Support	Profes Develo	sional opment		Technology Use

D. Short Term Planning: What are your most important plans, either new or continuing, for next year? Describe plans starting now and continuing through AY 21-22. (Optional: You may also describe long-term plans if desired.)

- 1) Our primary short plan is a replacement-hire for the position that was recently vacated by the Bio1C full-time faculty lead. The current pandemic-related hiring freeze prevented that position from being replaced this semester. This has left us with no full-time faculty with expertise in cell biology, thus our Bio majors capstone course (BIO1C) is taught entirely by adjunct faculty. Without this replacement hire we have no full-time faculty with a background in biotechnology to: co-lead the Biotech Bootcamp offered over the summer, lead the BioScience Advisory Board, or spearhead grant writing to fund BIO1C labs.
- 2) We would like to work with the Dean to include additional classes to our discipline plan at the initial planning stages for each semester. Each semester after we set up the class schedule, and offer classes to adjunct, we are then given extra sections to add into the schedule, requiring readjustments of staffing and last-minute hires. This is an extremely inefficient method of planning and does not allow for a careful and thoughtful hiring process. If the discipline plan matched what we historically offer, it would make planning and staffing more efficient and effective.

One class that has been greatly impacted by this, most recently is BIO7C Microbiology. Before the start of the Fall 2020 Semester microbiology had extremely long waitlists, which can be challenging to staff as it requires specific expertise. We would like to plan to have four sections of BIO7C Microbiology per semester regularly, so we don't have to readjust for each semester.

However, many of our other classes also get adjusted from the discipline plan regularly including all allied health courses (BIO7A, 7B), all majors courses (BIO1A, 1B, and 1C). Again, this creates a lot of extra work and inefficiencies and last-minute hiring of adjunct every semester.

- 3) Planning for a new Science Building is another short- and long-term goal. In spring 2019 we documented our basic facility needs and how that correlates to square footage in the Facilities Master Plan.
- 4) In fall 2019 we resubmitted a Faculty Position Request for a new faculty member in the Allied Health area. Despite previous full-time hires, the department's continued growth of sections has resulted in a low full-time to part-time faculty ratio. We also submitted a Faculty Position Request for a new faculty member to serve the biology majors and a Faculty Position Request for a new faculty member in general biology. Due to the current hiring freeze, none of these requests are being considered.
- 5) We plan to work with the lead lab technician and Dean to assess that our supply budget is able to fund the new kits and unexpected expenses for our lab courses. We currently only have lab kits for three courses, and will likely want to purchase kits for other classes in the future such as BIO30 and BIO10.
- 6) Two faculty (one full-time, one part-time) are working and collaborating extensively over the summer and during the semester to prepare our BIO 50 course (Human Anatomy & Physiology) for OEI submission in the Spring of 2021.
- 7) As part of Guided Pathways, we are continuing to examine our degree requirements, course scheduling, and potential completion barriers for students. This often requires extensive collaboration with faculty in other disciplines that offer courses required for biology degrees and certificates. This is a short- and long-term goal.
- 8) Our department would like to learn more about, and hopefully decrease, potential areas of inequity for students in our programs. This will involve collaboration with adjunct faculty, the Student Equity committee, and the Office of Research, Planning and Institutional Effectiveness. This is both a short- and long-term goal.

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							Process
	Curriculum		Human Resources		Pedagogy	X	Student Equity
	Committee Items						
	External Factors		Learning Support		Professional		Technology Use
					Development		

Section Two: Institutional Planning Topics (Required for All Programs)

A. Equity [Student Equity and Achievement Committee]: Please describe any recent actions your program has taken to increase equity and/or any challenges your program faces in promoting equity and equity-based decision-making? Areas to consider include students impacted by race/ethnicity, gender, sexuality, age, or disability status, as well as students who are disproportionately impacted due to the shift to remote instruction.

For assistance with this question, contact the Director of Student Equity and Achievement. [https://bit.ly/3fY7Ead]

- 1. Two Biology faculty members wrote a successful grant proposal for the NSF Advanced Technical Education Program. The proposal increases biotechnology skills in the curriculum while also focusing on closing equity gaps.
- 2. Faculty wrote and distributed a student survey to identify barriers faced by Allied Health and Biology students. A key finding was working students found it difficult to find classes that fit in their schedule. In response, we offered more night sections and an all-day Friday anatomy section also was added to the schedule to serve working students.
- 3. Several faculty held office hours in the tutoring center to increase access and support for their students and others.
- 4. Full-time and part-time biology faculty held smart shops focused on skills such as using the metric system and reading scientific literature to help prepare students for their biology courses.
- 5. Biology faculty participated in Guided Pathways program mapping to identify barriers to retention and completion for Allied Health and Bio Majors
- 6. Faculty continue to supervise & coordinate the Biology & Nursing club which supports students and offers career exploration.
- 7. Biology 30 faculty are working to develop a new introductory lab with a focus on student preparation and readiness for the course and will include introducing students to available campus support.
- 8. Some biology faculty received course-level demographic data on success.
- 9. Faculty worked with campus to get their students equipment needed for online learning (e.g. hotspots).
- 10. Our department is discussing how to increase faculty diversity and working with Shawn Taylor to help identify appropriate actions.
- 11. We offered increased course offerings over the summer so students who had to withdraw in spring had another chance to stay on track with their educational goals.

Equity Challenges

- Our department demographics mirror the campus in terms of distribution of ethnic groups. Some of the groups have very few students (e.g. African American and Filipino). The success/non-success/withdrawal rate varies considerably between ethnic groups. Some demographics are well above the set standard [Asian, (77%) White (76%), Multiethinic (75%) Filipino (74%)] but other groups have much lower success rates [Latino (67%), African American (50%)].
- 2. Data (disaggregation). We have not had enough SLO data to look at disaggregated data. As more disaggregated data becomes available we often have very small sample sizes and will need to look at multiple years of data. The data available online on success doesn't allow for looking at demographic data by two factors or more (e.g. Female and African American) at the course level.
- 3. A major challenge is that we see the success gap with Latino and African American students but we do not know why it is happening.
- 4. There is a lack of funding for student tutors/mentors. In addition, we do not have a set program in place to make sure student tutors and mentors are trained. It may be that more tutoring would help students succeed.
- 5. There is no faculty oversight nor release-\ time for training student tutors.
- 6. There is also no faculty release time to work on equity initiatives (e.g. student focus groups and surveys and persistence projects) or on reworking the curriculum to look at department wide policies on topics such as culturally relevant content and grading policies. We know that we have an equity gap with our Latinx students but we do not know exactly why the gap is happening.
- 7. The small surveys that we have completed show that students need flexibility of course offerings. We do not have enough lab techs to offer classes that meet on weekends. Our lab tech coverage at night is low. Because of lack of space the maximum number of biology classes we could offer at night is 4 (for the 4 lab rooms).
- 8. Students work in the BLC on independent projects and with models. The space is often overcrowded, making it difficult for students to get the help they need.
- 9. Two of our GE classes have extremely low student success rates (Bio 20 = 44% and Bio 40 = 55%). We need to investigate further how this breaks down among different student groups.

B. SLOs/SAOs [SLO Committee]:

You should complete ONE of the following three sections. Please choose the option that is most appropriate for your program:

B1: Instructional Programs with PSLOs

B2: Instructional Programs without PSLOs or with Special Circumstances

B3: Non-Instructional Programs

Skip to the section you chose. If you are not sure which option to pick, contact the SLO Committee Chair or Program Review Committee Chair for assistance.

B1: Instructional Programs with PSLOs

In this year's Program Review, and in support of Accreditation, we would like a snap-shot on how your program plans to collect, discuss and report assessment findings to develop best practices for teaching and student learning ("closing the loop").

As a program, please select one PSLO for a degree or certificate to focus on. This PSLO should reflect one area of your program that you would like to investigate in depth. For example, your selection may focus on an area to improve student success, to update pedagogy, equity issues, or to examine a new degree/certificate, etc.

In this section, describe your plan for assessment data to be collected, analyzed and discussed, and reported out in next year's Program Review. Your plan should identify the CSLOs that feed into your selected PSLO so that a complete data set is collected. You may choose to do this over one or two semesters. In next year's Program Review, you will be asked to summarize your SLO assessments, analysis of those findings, and proposed changes that may be implemented to improve teaching and student learning.

For assistance with these questions, contact the SLO Committee Chair. [https://bit.ly/3fY7Ead]

B1a. In the space below, insert the complete wording of the PSLO and potential reason(s) for selecting it for analysis.

- Upon completion of an AA in Biology, students are able to explain and apply basic principles and processes of biology at different levels, from the biochemical to the ecological.
- 2. Upon completion of an AA in Biology: Allied Health, students are able to explain and apply the basic processes of homeostasis in humans from the cellular to the organismal level.

Both of these PSLOs address the core content in our two majors. We are interested in identifying potential equity gaps.

B1b. In the table below, list the CSLOs that feed up to the identified PSLO and check the semester or semester(s) that the CSLO will be assessed and data entered into eLumen. (If this different than the submitted SLO template plan, please update and resubmit the template plan. Send the updated template to mwiest@laspositascollege.edu and ahight@laspositascollege.edu)

Complete Name of CSLO	Fall 2020	Spring 2021	Summer 2021
Upon completion of BIO 1A, students should be able to explain and apply principles and processes of botany and ecology at different organizational levels, from the biochemical to the ecological.	Х	X	
Upon completion of BIO 1B, a student should be able to explain and apply principles and processes of zoology and evolution at different organizational levels, from tissues to the ecological.	Х	Х	
Upon completion of BIO 1C, a student should be able to explain and apply basic principles and processes of cellular and molecular biology at different levels, from the biochemical to the cellular.	Х	Х	
Upon completion of BIO 7A, students will be able to relate structure to the function of anatomical structures and understand how a change in structure would alter function.	Х	Х	
Upon completion of BIO 7B, students will be able to apply the principles of homeostasis and the use of feedback loops to control physiological systems in the human body.	Х	Х	
 Upon completion of BIO 7C, students will be able to acquire, articulate, and apply specialized language and knowledge relevant to microbiology. 	Х	Х	

B1c. When will analysis and discussion of the assessment data be completed (during next year's Program Review is an option)? The reporting out of the "closing the loop" analysis will be part of next year's Program Review.

We will analyze, discuss, and report out in next year's Program Review.	

B2: Instructional Programs without PSLOs or with Special Circumstances

If your department does not have PSLOs, you may choose one CSLO to focus on. This option may also be used if there is a strong departmental rationale for focusing on a single CSLO.

As a department, please select a course to focus on. The selected course and one of its CSLOs should reflect an area that you would like to investigate in depth. For example, your selection may focus on a course to improve student success, to update pedagogy, to analyze equity issues, etc.

For assistance with these questions, contact the SLO Committee Chair. [https://bit.ly/3fY7Ead]

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B3: Non-Instructional Programs

In this year's Program Review, and in support of Accreditation, we would like a snap-shot of how your student service area plans to collect, discuss, and report assessment findings to develop best practices for teaching and student learning ("closing the loop").

Please select one SAO to focus on. This SAO should reflect an area of your program that you would like to investigate in depth. For example, your selection may focus on an area to improve student success, increase best practices, to address equity issues, or to examine a new service/program, etc. The intent is for this section to be useful for reflection to develop best practices for serving students.

For assistance with these questions, contact the SLO Committee Chair. [https://bit.ly/3fY7Ead]

B3a. In the space below, insert the complete wording of the SAO and potential reason(s) for selecting it for analysis.
B3b. When and how will this SAO be assessed and data entered into eLumen? (If this different than the submitted template plan, please update and resubmit the template plan. Send the updated template to mwiest@laspositascollege.edu and ahight@laspositascollege.edu)
B3c. When will analysis of the assessment data will be completed (during next year's Program Review is an option)? The reporting out of the "closing the loop" analysis will be part of next year's Program Review.

Section Three: Curriculum Review (Programs with Courses Only)

For assistance with this section, contact the Curriculum Committee Chair. [https://bit.ly/3fY7Ead]

The following questions ask you to review your program's curriculum. To see the last outline revision date and revision due date:

- 1. Log in to CurricUNET
- 2. Select "Course Outline Report" under "Reports/Interfaces"
- 3. Select the report as an Excel file or as HTML
- A. Title V Updates [Curriculum Committee]: Are any of your courses requiring an update to stay within the 5 year cycle? List courses needing updates below. Reminder: updates to course title or units, and course deactivations, will require updating any program they are associated with. List programs requiring updating in question (B).
- B. Degree/Certificate Updates [Curriculum Committee]: Are there any programs requiring modification? List needed changes below.

No conductor of them them DE Addresses and ad-
No updates other than DE Addenda needed
C. DE Courses/Degrees/Certificates [Distance Education Committee]: Detail your department's plans, if any, for adding DE courses, degrees, and/or certificates. For new DE degrees and/or certificates (those offered completely online), please include a brief rationale as to why the degree/certificate will be offered online.